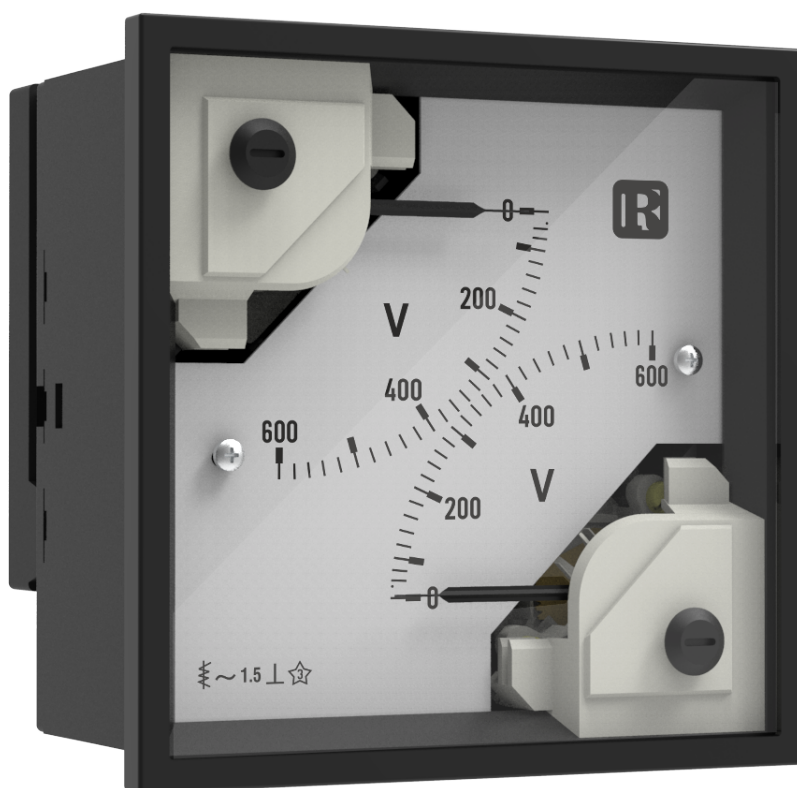




Data Sheet

Dual Moving Iron AC Meters

EQ 2 in 1



Measure



Control



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Application

The moving iron panel meters, 2-in-1 housed in moulded polycarbonate cases are suitable for the measurement of AC currents for frequency range of 15...400Hz and voltages in the frequency range of 15...100Hz.

Moving iron meters indicate rms-values practically independent of waveform even of high harmonics. Error of indication may occur for extreme waveforms (e.g. phase gating controls) & for frequencies above 100Hz.

These meters offer several advantages in switchboards and Generating Set Panels. Number of meters can be mounted in a single cut out (Mosaic mounting). Front window, Glass and bezel can be easily replaced.

Features

- Two different meters in one case.
- Near linear scale.
- Glass filled polycarbonate housing(UL 94 V-0).
- Easily replacable glass & bezel.
- Knife edge pointer

Movement

Moving iron movement has pivots of very high hardness. Movement suspended between spring loaded sapphire jewel and silicon jewel Movement is critically damped by use of silicon oil.

Specifications

Scale and Pointer

Pointer	: Knife - edge pointer
pointer deflection	: 0 ... 90°
Scale characteristics	: Near Linear above 10% of nominal full Scale value
Scale division	: Coarse - fine
Scale length	: 54 mm

Over Range

Ammeters	: 2 times nominal current
Voltmeters	: 1.2 times nominal voltage

Mechanical Data

Case details	: Moulded square case suitable for mounting in Control/Switchgear panels, Machinery consoles.
Case material	: Polycarbonate , flame retardant & drip proof as per UL 94 V-0.
Front facia	: Glass
Colour of bezel	: Black
Position of use	: Vertical

Panel fixing	: Mounting Clamp
Mounting	: Stackable in a single cutout
Panel thickness	: ≤ 25 mm

Terminals

Voltmeters and Ammeters < 30A	: Hexagon studs, M4 screws & wire clamps E3
Ammeters ≥ 30A	: Threaded studs M6 with Nuts

Electrical Data

Measuring quantity	: AC voltage or current
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Power consumption:-

Voltmeters	: < 4.5VA
Ammeters < 15A	: < 0.5VA
Ammeters > 15A	: < 0.8 VA
Overload capacity	: (acc. to IS: 1248 / IEC 51)
Continuously	: 1.2 times rated voltage /current
Short duration Voltmeters	: 2 times for 0.5 sec : 9 overloads
	: 2 times for 5 sec : 1 overload

Ammeters	: 10 times for 0.5 sec :9 overloads
	: 10 times for 5 sec : 1 overload

Enclosure code(IEC 529)	: IP 52 case
	: IP 00 for terminals without back cover
	: IP 20 for terminals with back cover

Insulation class	: Group A according to VDE 0110
Rated insulation voltage	: 2 in 1 EQ 1000V
Proof voltage	: 3KV
Installation category	: 600V CAT III
Insulation resistance	: > 50 Mohm at 500 V DC

Reference Conditions

Accuracy class	: 1.5 according to IS : 1248 (IEC 51/ DIN EN 60051)
Ambient temperature	: 23°C 2°C
Position of use	: Nominal position ±1°
Input Waveform	: Rated value of measured quantity sine wave, distortion factor ≤ 5%
Frequency	: 45...65HZ
Other conditions	: IS:1248 (IEC 51/ DIN En60051)

Nominal Range of Use

Ambient Temperature	: 0 ...50°C
Position of use	: Vertical 5°
Frequency	: 45 ... 65Hz
External magnetic field	: At 0.4 kA/m

Environmental Conditions

Climatic suitability	: Climate category II as per IS : 1248, IEC 60051 (climatic class 3 according to VDE/VDI 3540)
Operating temperature	: -10... + 55°C
Storage temperature	: -25... + 65°C
Relative humidity	: ≤75% annual average, non-condensing



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Shock resistance	: 15g, for pulse duration 11ms
Vibration resistance	: 10-55-10Hz for ampli. 0.15mm (1.5 g at 50 Hz.)
Pollution degree	: 2

Standard Measuring Ranges

A.C. Voltage	A.C. Current
6V	100mA
10V	150mA
15V	250mA
25V	400mA
40V	600mA
60V	1A
100V	1.5A
120V	2.5A
132V	3A
150V	4A
250V	5A
300V	6A
400V	10A
500V	15A
600V	20A
	25A
	30A
For use on voltage transformer	40A
.../100 V secondary	50A
	60A
.../110 V secondary	For use with Current transformer
	.../1A secondary or
	.../5A secondary
Any combination	Ammeter / Ammeter
	Voltmeter / Voltmeter
	Ammeter / Voltmeter
In case of Ammeter / Ammeter	1 meter could be upto 60A but
2nd one will be only upto 10A	
Non-Standard ranges available on request.	

Options

Case	
Front fascia	: Antiglare glass
Colour of bezel	: Red, Yellow, Blue, White
Red index pointer	: Front adjustable on site
Position of use	: On request 0° ...180°
Dial	
Blank dial	: With initial and end values marked.
Special markings	: Numbering / Lettering.
Division markings	: Basic divisions without numbering.
Colour markings/bands	: Red or green
Over range (Ammeters)	: Two, three and five times over range
	Six times over range

Applicable Standards

Nominal case and cutout dimensions for indicating Electrical instruments.	: IS 2419 DIN 43700
Scale and pointer for electrical measuring instruments.	: IS 1248 DIN 43802
Connections and Terminal markings for panel meters	: IS 1248 DIN 43807
Terminal bolts / leads	: DIN 46200/46282
Safety requirements and protective measures for Electrical indicating instruments and their accessories.	: IS 9249 DIN 40050 VDE 0110 VDE 0410 IEC 529, IEC 1010
Performance specifications for direct acting indicating analogue electrical measuring instruments & their accessories	: IS 1248 IEC 51/DIN EN 60051 DIN 43701
Environmental conditions	: IS 1248 IS: 9000 VDE / VDI 3540
Front frames for indicating measuring instruments principle dimensions.	: DIN 43718
UL Combustibility class.	: UL 94 V-0
Comply with following European directives (EMC directive), 2006/95/EC (low voltage directive) & amendment 93/68/EEC, For CE Marking	: 2 004 / 108 / EC

Accessories

Safety Terminal Protection

Full sized polycarbonate back cover to provide protection against accidental contact (hand and fingers).



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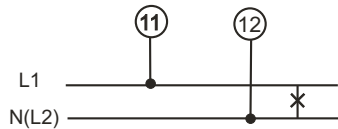
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Safety Precautions

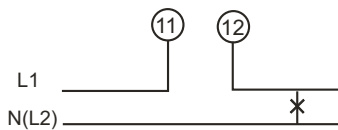
- 1) Instruments with damaged bezel or glasses must be disconnected from the mains.
- 2) Adequate safety clearance must be maintained to control panel fasteners and to sheet metal housing. If non - insulated connector wires are used.
- 3) The back cover must be snapped into place after connector wires have been clamped for protection against accidental contact
- 4) Bezel, Scale and Glass may only be replaced under voltage free conditions.
- 5) Instruments to be used in grounded panel.

Connections

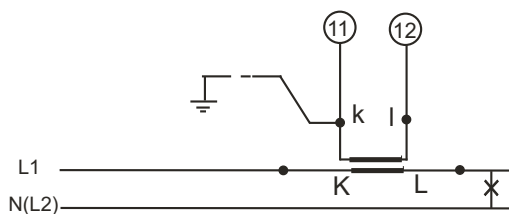
AC Voltage (Direct connected)



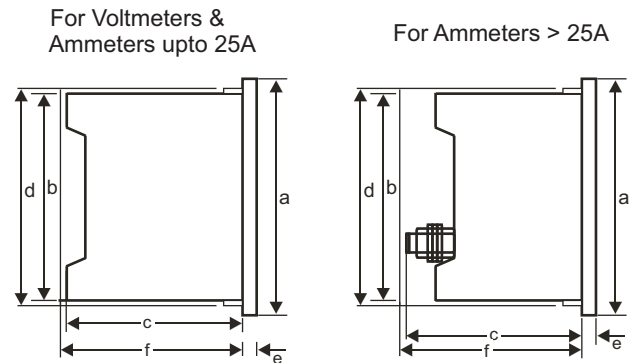
AC Current (Direct connected)



AC Current (for use on current Transformer)



Dimensions



Dimensions (in mm)		EQ 9T	(in mm)	EQ 1T
Bezel	a	96	Bezel	a
Case	b	90	Case	b
Depth	c*	53	Depth	c*
	d	91.5		137.5
	e	5.5		5.5
cutout size		92 ^{+0.8}	cutout size	138 ⁺¹
Depth with			Depth with	
back cover	f**	64	back cover	f**
	* c = 62 mm, for I > 30A & upto 60A			
Weight approx.		0.2 kg	Weight approx.	0.4 kg



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Ordering Information

Type DE	Moving-iron panel meter	Moving-iron panel meter
Front dimension 96	96 mm x 96 mm	144 mm x 144 mm
Over range(Ammeters)	2 times, 3 times 6 times, 5 times	2 times, 3 times 6 times, 5 times
Measuring ranges	Refer to table inside	Refer to table inside
Terminal protection	full sized polycarbonate backcover	full sized polycarbonate backcover
Panel Fixing	Mounting Clamps	Mounting Clamps
Red Index Pointer	None ^{*1} Required ^{*3}	None ^{*1} Required ^{*3}
Housing Color	white, ^{*1} Black ^{*3}	Black ^{*1} , White ^{*3}
Front Facia	Normal glass ^{*1} Antiglare glass ^{*3} Polycarbonate glass ^{*3}	Normal glass ^{*1} Antiglare glass ^{*3} Polycarbonate glass ^{*3}
Colour of Bezel	Black ^{*1} Red,Blue, Yellow,White ^{*3}	Black ^{*1} Red,Blue, Yellow,White ^{*3}
Position of use	Vertical ^{*1} On request 0 180° ^{*3}	Vertical ^{*1} On request 0 180° ^{*3}
Dial	Standard scale same as measuring range ^{*1} Blank dial w ith division ^{*3} Additional lettering on request ^{*3} Additional numbering on request ^{*3} Coloured marking red or green ^{*3} Coloured sector red or green ^{*3}	Standard scale same as measuring range ^{*1} Blank dial with division ^{*3} Additional lettering on request ^{*3} Additional numbering on request ^{*3} Coloured marking red or green ^{*3} Coloured sector red or green ^{*3}
Logo	RISHABH ^{*1}	RISHABH ^{*1}

*1 Standard

*3 Please clearly add the desired specifications while ordering

Ordering Example

EQ 30A - EQ 500V
EQ 300V - EQ 500V
EQ 30A - EQ 5A

Specifications are subject to change without notice



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Specifications may change without prior notice



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